Appendix G

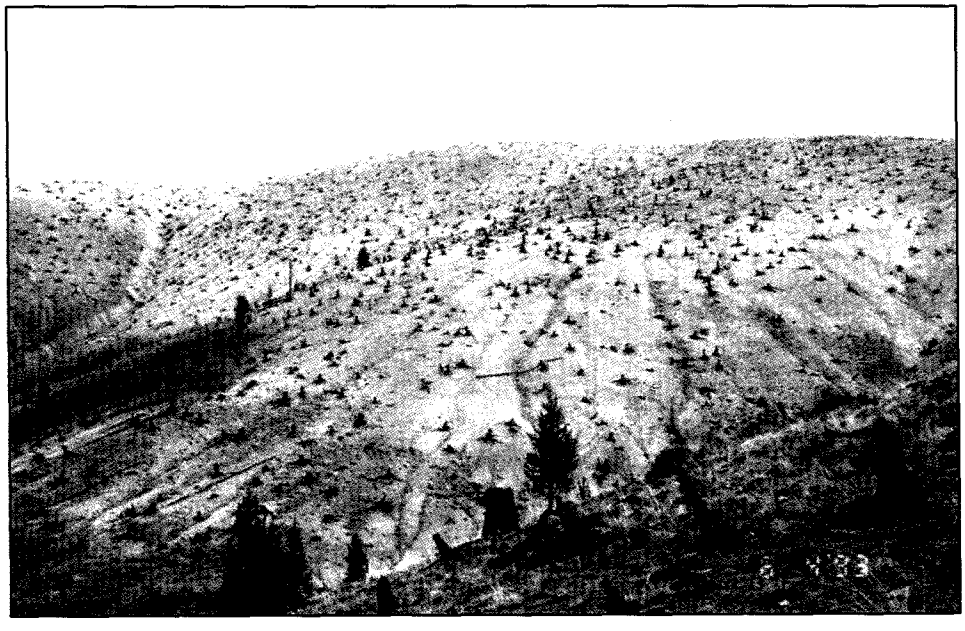
DRAFT CONCEPTUAL SMELTER HILL AREA UPLANDS RESOURCES RESTORATION PLAN

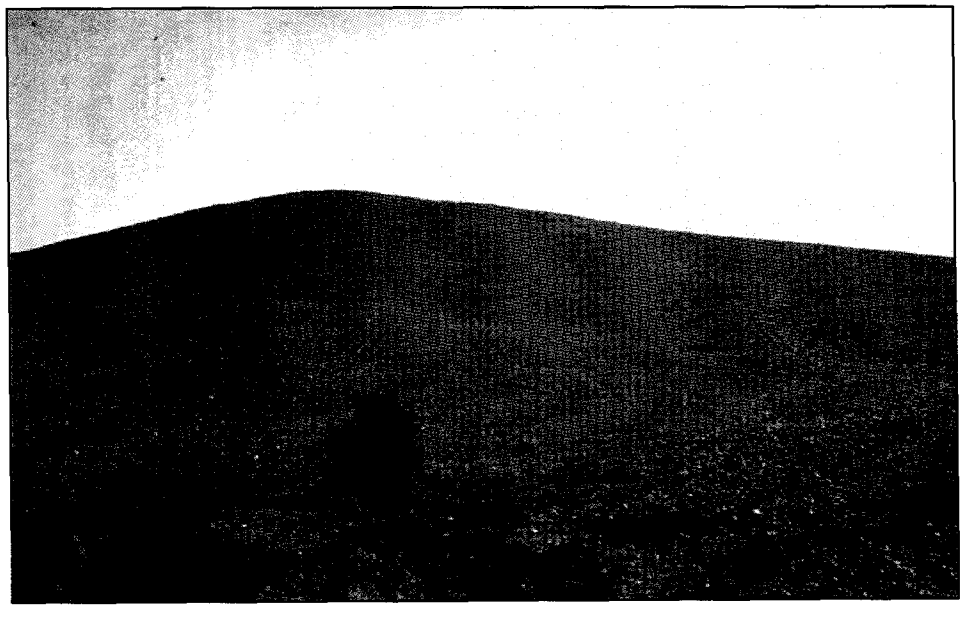
Prepared by

Montana Department of Justice

Natural Resource Damage Program

DECEMBER 2007





DRAFT CONCEPTUAL

SMELTER HILL AREA UPLANDS RESOURCES

RESTORATION PLAN

Prepared by:

Montana Department of Justice
Natural Resource Damage Program
1301 E. Lockey
Helena, MT 59601

DECEMBER 2007

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Section 1: Introduction

Natural resource damages under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 et seq., (CERCLA) are designed to compensate trustees[1] for injury[2] to natural resources[3] that are residual to CERCLA response actions.[4] In 1995, the State of Montana (State) issued a Restoration Determination Plan (RDP) as part of its natural resource damage assessment. The RDP quantified the amount of natural resource damages to which the State was entitled in order to restore injured natural resources in the Upper Clark Fork River Basin (UCFRB). Among other resources, the RDP identified the costs to restore the Mount Haggin, Stucky Ridge, and Smelter Hill Injured Areas (Injured Areas). The RDP for the Injured Areas was revised in 1999, and again in 2002.[5]

The State, the United States, and AR have now lodged a consent decree with federal district court.[6] Upon the effective date of the consent decree, AR has agreed to pay $72.5 million plus interest, to resolve the State natural resource damage claims for the State's Step 2 Sites. The consent decree allocates 19.45% of the consent decree settlement money, after payment of assessment and litigation costs, to the Smelter Hill Area Uplands State Restoration Account to restore, rehabilitate, replace or acquire the equivalent of the injured natural resources as provided in the State's restoration plan. This results in approximately $13.3 million for the Injured Areas. This Draft Conceptual Smelter Hill Area Uplands Resources Restoration Plan (DCRP) presents the State's plan for this restoration. The State relied on the RDP in the development of this DCRP.

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[1] The State of Montana is a trustee of natural resources within the state. CERCLA Section 107(f)(1), 42 U.S.C. § 9607(f)(1).

[2] As trustee, the State is entitled to "damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from" the release of a hazardous substance. CERCLA Section 107(a)(4)(C), 42 U.S.C. § 9607(a)(4)(C).

[3] "The term 'natural resources' means land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by" the State. CERCLA Section 101(16), 42 U.S.C. § 9601(16).

[4] "The terms 'respond' or 'response' means remove, removal, remedy, and remedial action." CERCLA Section 101(25), 42 U.S.C. § 9601(25).

[5] The 2002 RDP also included, as attachments, *two reports, the Ecological Restoration Plan for the Mount Haggin Injured Area* and the *Ecological Restoration Plan for the Stucky Ridge and Smelter Hill Injured Areas, which were prepared by Bitterroot Restoration, Inc.*. These reports characterized the injured areas and reference areas, and compared restoration alternatives including specifications of restoration treatments, descriptions of restoration species, detailed restoration prescriptions, and cost estimates for the various restoration prescriptions.

[6] *Consent Decree for the Clark Fork River Operable Unit and for Remaining State of Montana Clark Fork Basin Natural Resource Damages Claims*, Civil Action No. CV89-039-BU-SEH (lodged - 2007).

The Injured Areas are included in the Anaconda Smelter NPL Site. Therefore, in addition to the RDP, the State also relied on certain EPA Final Design Reports / Remedial Action Workplans (RAWPs/FDRs) in the development of the DCRP. As discussed above and in Section 4, natural resource damages are residual to CERCLA response actions. The State also relied on the RAWPs/FDRs because, under the terms of the consent decree, the State agreed to meet certain EPA remedial requirements through restoration on State-owned property within the Injured Areas.[7] These remedial consent decree requirements, including attainment of performance standards, [8] and obligation to perform additional remedial work and emergency response, are set forth in Appendix G.

This document characterizes the condition of natural resources in the Injured Areas, briefly describes the EPA response actions, summarizes the residual natural resource injury, and presents the State's actions for restoring the natural resources in the Injured Areas.

[7] These EPA remedial requirements are referred to in the consent decree as the State Property Remedial Commitments.

[8] "Performance Standards" are the cleanup standards and other measures of achievement of the goals of the remedial action contained in a record of decision, including applicable, relevant and appropriate requirements (ARARs).

Section 2: Description of the Site and Injury[9]

The Injured Areas have been injured due to releases of hazardous substances from mineral processing activities. Enormous volumes of hazardous substances, including copper, arsenic, and cadmium, were continually released into the air by these operations and subsequently deposited onto the land.

The primary source of hazardous substances to the Injured Areas was emissions from the Anaconda Smelter. Emissions from the Anaconda Smelter stack resulted in the deposition of hazardous substances across hundreds of square miles of surface soils surrounding and downwind of the stack. This resulted in injury to soils, vegetation, wildlife habitat, and wildlife.[10]

The injury determination undertaken by the State for upland resources delineated those areas displaying gross (visible) injury attributable to the deposition of hazardous substances released as smelter emissions and/or fugitive dust emissions. Grossly injured resource areas were defined as those areas which exhibit complete or virtual elimination of major indigenous plant associations, little or no regeneration of major indigenous plant associations, and extensive topsoil exposure and erosion due to vegetation loss.

Upland areas which met the grossly injured criteria extend across approximately 17.8 square miles (11,356 acres) of land. The grossly injured area encompasses the eastern portion of Stucky Ridge and the hills on the north side of Lost Creek Road (2,408 acres), areas to the west and south of Smelter Hill (4,649 acres), and portions of the Mount Haggin Wildlife Management Area east of the Mill Creek Highway (4,299 acres).

Soils in the Injured Area have elevated concentrations of hazardous substances including arsenic, cadmium, copper, lead, and zinc. Laboratory tests have confirmed that these soils are phytotoxic, which is consistent with visual observation of gross injury. Metal concentrations are highest in the upper two inches of soil. Elevated metal concentrations on the soil surface and upper soil layers prevent vegetation establishment, which explains the lack of natural recovery in the area. Absent human intervention, concentrations of hazardous substances in the soil will not be reduced sufficiently to allow for revegetation in a reasonable length of time.

In general, across the Injured Areas, there has been a shift in plant community types from coniferous forests and grassland to areas of sparse cover consisting of noxious weeds and some grasses or bare ground. In addition, stands of aspens are more

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[9] The information contained in this section is summarized from the State's 1995 Terrestrial Resources Injury Assessment Report.

[10] Mining and mineral-processing wastes and contaminated soils are also sources of on-going releases of hazardous substances through transport by the wind and redeposition onto the land surface and through surface runoff into water resources.

prevalent than they would have been had the area not been injured. Approximately one square mile of aspen is present on both the Smelter Hill and Mount Haggin Injured Areas.

Absent hazardous substances in the soil, the Injured Areas on Smelter Hill and Mount Haggin would have vegetative cover consisting of approximately 70% forest and 30% grassland, and the Injured Area on Stucky Ridge would have vegetative cover consisting of approximately 30% forest and 70% grassland. Of the total 11,356 acres that exhibit gross injury, 6,993 acres (62%) would have been primarily forestland and 4,373 acres (38%) would have been primarily grassland.

The elimination of upland vegetation communities in the grossly injured area has caused a severe disruption to the ecosystem. Most notable has been the drastic reduction in the quantity and quality of wildlife habitat.

Section 3: CERCLA Response Actions

The Anaconda Regional Water, Waste, and Soils Operable Unit Record of Decision (September 1998) (ROD) including its upcoming Explanation of Significant Differences (ESD), as well as the related RAWPs/FDRs, set forth the remedial actions and the performance standards within the Anaconda Smelter NPL Site. The RAWPs/FDRs pertinent to the Injured Areas are the RAWPs/FDRs for Remedial Design Unit (RDU) 1 Stucky Ridge, RDU 3 Smelter Hill Uplands, RDU 14 Smelter Hill, and RDU 15 Mount Haggin Uplands.[11]

To accomplish the ROD objectives, the RAWPs/FDRs generally require the following:

- Reduction of arsenic concentrations to meet applicable human health levels using a combination of revegetation treatment techniques
- Application of revegetation techniques, which may include deep tilling with lime additions and soils amendments, to reduce surface soil arsenic concentrations to human health levels and establish a diverse, effective, and permanent vegetation cover
- Application of revegetation technologies to establish a self-sustaining assemblage of plant species capable of stabilizing the soils against erosion and minimizing transport of contaminants to surface and ground water in order to meet water quality standards, maximizing water usage, re-establishing wildlife habitat, and accelerating successional processes
- Application of best management practices (BMPs), as appropriate
- Sediment basins to control storm water run-off where appropriate
- Institutional controls to maintain the integrity of remedial actions and prevent exposure to contaminated soil
- O&M activities

The State recognizes that implementation of the remedy will help provide site stability, reduce exposure of wildlife to contaminants of concern, and help provide sustainable vegetative cover in a number of areas.

[11] These FDRs provide for remedial actions within the related Injured Areas, but do not address all of the State's restoration goals and objectives.

Section 4: Residual Injury to be Addressed by Restoration

Residual injury is the injury to natural resources that remains substantially unimproved following implementation of the remedy. This concept is predicated on the fact that response actions can improve the condition of injured natural resources and thereby lessen natural resource injury. Although the State recognizes the significant remedy effort, the remedial actions fall short of restoration.

The State analyzed the areas of residual injury within the Injured Areas, and focused on three restoration categories for use of the consent decree settlement moneys. First, the remedial action on the Mount Haggin Injured Area specifies the revegetation of 137 acres in the Cabbage Gulch area in the north end of the Mount Haggin Injured area. The State believes residual injury remains outside of Cabbage Gulch, most significantly to the 850 acres of Bare and Degraded Areas identified in the RDP. These 850 acres of Bare and Degraded Areas within the 4,300 acre Mount Haggin Injured Area lack vegetation, soil organisms, and soil organic matter that provide nutrients and moisture retention. These Bare and Degraded Areas will therefore be addressed as discussed in Section 5.[12]

Second, the State determined that further restoration should be performed where the State is performing remedial action under the consent decree referred to in Section 1 and footnote 6.[13] The integration of remedial action and restoration presents a cost-effective way to restore natural resources closer to baseline condition. The State is therefore augmenting the remedial action at the State-owned portion of Section 36 in the Stucky Ridge Injured Area and at Cabbage Gulch in the Mount Haggin Injured Area. These combined restoration/remediation actions are described in Section 5.

Third, it is expected that the above described restoration actions will not deplete the restoration account dedicated to the Injured Areas and there will be approximately $4.0 million, plus interest, in the account after these restoration actions are implemented. It is anticipated that additional restoration will be implemented on land owned by Anaconda/Deer Lodge County within the Injured Areas using the remaining money in the account. Restoration actions within these areas will be coordinated with remedy for these areas. The precise scope of this additional restoration will be determined at a later date, although it is presently expected that such restoration will be based, at least in part, on the proposed restoration actions presented in the previously referenced report, *Ecological Restoration Plan for the Stucky Ridge and Smelter Hill Injured Area.*

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[12] The 2002 RDP and its attachment, the *Ecological Restoration Plan for the Mount Haggin Injured Area,* identified 267 acres of bare areas (BA), 246 acres of steep degraded grassland areas (SDG), 344 acres of degraded grassland areas (DG) as requiring restoration treatments. Together, these impacted areas compromise the 857 acres of Bare and Degraded Areas identified in the RDP. These areas are approximately identified in the Montana Natural Heritage map, Figure 1.

[13] As discussed in Section 1, the State agreed to meet certain EPA remedial requirements through restoration actions on State-owned property within the Injured Areas.

Section 5: State Actions

5.1 Restoration of the Bare and Degraded Areas in the Mount Haggin Injured Areas. The Mount Haggin restoration addresses vegetation of the Bare and Degraded Areas (approximately 850 acres). These areas are approximately identified on Figure 1. For these Bare and Degraded Areas, the State plans the following restoration activities:

- Lime application. Exact liming rates and lime type will be determined during design and is expected to be between 0 and up to 8 tons per acre. Aerial application is expected to be the most cost-effective method of application.

- Tree and shrub planting on most of the 850 acres. Tree and shrub plantings of about 500 stems per acre will be placed in these areas. Containerized plants will be at least 10 cubic inches in size and a year old. The exact spacing and types or plants will be determined during design. It is expected that islands of vegetation will be planted rather than uniform spacing throughout the area.

- Aerial fertilization in years three and five. Fertilization rates will be most likely be at a 300 - 400 pounds per acre rate and spread via helicopter.

- Seeding. Some areas will require mechanical incorporation of seed where equipment can be utilized; other areas will need seed applied by hand or via helicopter. Seed mixes and application rates are found in Appendix C.

The State will apply the vegetation considerations set forth in Appendix C.

5.2 Combined Restoration/Remediation in the Mount Haggin Injured Area. The State will perform the remedial action required in the RDU 15 RAWP/FDR, attached as Appendix D. Together, Figures 2A, 2B and the accompanying legend present the polygon delineation and required remedies. The RAWP/FDR includes, but is not limited to, the following actions:

- Tree planting (500 plants/acre) on 112 acres of steep slope areas. The exact spacing and types or plants will be determined during design. It is expected that islands of vegetation will be planted rather than uniform spacing throughout the area.

- Dozer basins on 18 acres. Dozer basin spacing on the 18 acres of SSR-3 areas. Exact placement will be determined during design.

- Tillage to 6 inches on 16 acres. Tillage of 6 inches to reduce metal concentrations by mixing the surface soil layers with the lower soil layers in order to help provide a suitable growth medium. Incorporation of organic matter may also be necessary.

- Tillage to 12 inches on 9 acres. Tillage of 12 inches to reduce metal concentrations by mixing the surface soil layers with the lower soil layers in order to help provide a suitable growth medium. Incorporation of organic matter may also be necessary.

- Fertilization and lime application on 25 acres of tillage areas. Liming in tilled areas will be at a rate of approximately 6 tons per acre. Fertilization, which will be incorporated during seedbed preparation, will consist of 12-16-30 (% nitrogen, % phosphate and % potassium) fertilizer.

- Seeding of all 137 acres.[14] The 25 acres of tillage areas will be mechanically seeded. The remaining 112 acres will be seeded by hand, air or mechanically depending on the steepness of slope.

- Best Management Practices for stormwater concerns. BMPs are necessary during construction and until vegetation is established.

- Sediment Basins. Sedimentation basins will be established and maintained in Cabbage Gulch, Joyner Gulch and Muddy Gulch.

- Weed control as necessary.[15] It is expected that aerial and hand application of chemicals, along with biological controls, will be necessary to control knapweed, whitetop, and leafy spurge. This effort will be the first component of remedial action on the site.

In addition, the State will perform the following restoration activities at Cabbage Gulch:

- Lime application on 112 acres of steep slope areas. Exact liming rates and lime type will be determined during design but is expected to be between 0 and up to 8 tons per acre. Aerial application is expected to be the most cost-effective method of application.

- Aerial fertilization of all 137 acres in years three and five. Fertilization rates will be most likely be at a 300 – 400 pounds per acre rate and spread via helicopter. Exact fertilization rates per acre will be determined during design.

The additional restoration actions may affect the timing and sequencing of the Cabbage Gulch activities since remediation and restoration actions will occur concurrently. Mount Haggin restoration, including the Cabbage Gulch remedial

[14] The seed mix will be modified slightly from that prescribed in the RDU 15 FDR and will instead consist of the species set forth in Appendix C.

[15] The State plans aggressive weed control in this area.

components, will occur in 2008 – 2013. Timing of anticipated activities for Mount Haggin activities are:

- 2008 or 2009: weed control
- 2010: lime application
- 2011 - 2013: fertilizing, seeding and planting
- 2014 - 2016: monitoring

State actions at the Mount Haggin Injured Area, consisting of the restoration of the Bare and Degraded Areas and the combined restoration / remediation at Cabbage Gulch, and other areas is estimated to be $6.7 million. More detailed costing is presented in Appendix F.

The State will apply the vegetation considerations set forth in Appendix C.

5.3 Combined Restoration / Remediation on the Stucky Ridge Injured Area

The State will perform the remedial action required in the RDU 1 RAWP/FDR, attached as Appendix E on the State-owned portion of Section 36 (480 acres). Figure 3 presents the polygon delineation and required remedies. The RAWP/FDR includes, but is not limited to, the following actions:

- Tillage to a depth of 12 inches. Tillage of 12 inches on 335 acres to reduce metal concentrations by mixing the surface soil layers with the lower soil layers in order to help provide a suitable growth medium. Incorporation of organic matter may also be necessary, however, it is not expected that significant organic matter additions will be necessary, since preliminary and nearby data shows significant amounts of organic matter in the soils.

- Lime application. Liming in tilled areas will average about 22 tons per acre and will occur after one tilling pass.

- Seeding.[16] Along with the seed mix proposed will be the addition of shrub seed to enhance species composition.

- Fertilizing. Fertilization, which will be incorporated during seedbed preparation, will consist of 12-16-30 (% nitrogen, % phosphate and % potassium) fertilizer.

- Planting of shrubs and trees on 90 acres designated as steep slope areas. The exact spacing and types or plants will be determined during design. It is expected that islands of vegetation will be planted rather than uniform spacing throughout the area.

[16] The seed mix will be modified slightly from that prescribed in the RDU 1 FDR and will instead consist of the species set forth in Appendix C.

- Dozer basins on 50 acres of steep slope areas. Dozer basin spacing on the 50 acres of SSR-3 areas will be determined during design.

- Stone check dams and other best management practices. BMPs are necessary during construction and until vegetation is established.

- Weed control. Aerial chemical weed control has been occurring in Section 32 for a number of years. Further controls will be evaluated during design.

In addition, the State will perform the following restoration activities at the State-owned portion of Section 36:

- Lime application on 90 acres of steep slope areas. Exact liming rates and lime type will be determined during design and is expected to be about 20 tons per acre. Aerial application is expected to be the most cost effective method of application.

- Stripping and grading on a portion of the tillage areas. These areas contain highly impacted soils and are proposed for stripping of the upper 4 inches and consolidation in an area on Stucky Ridge in Section 36. Tilling and liming of the underlying subgrade will be done after stripping is performed.

- Planting of shrubs and trees on half the tillage and rock areas. 177 acres are slated to be planted with shrubs and trees. It is expected that islands of vegetation will be planted rather than uniform spacing throughout the area.

- Aerial fertilization on the tillage and steep slope areas in years three and five. Fertilization rates will be most likely occur at a 300 - 400 pound per acre rate and spread via helicopter. Exact fertilization rates per acre will be determined during design.

The additional restoration actions may affect the timing and sequencing of activities on the State-owned portion of Section 36. The State will apply the vegetation considerations set forth in Appendix C. Stucky Ridge restoration / remediation will occur from 2008 to 2012. Timing of anticipated activities for Stucky Ridge are:

- 2008: weed control
- 2009: stripping, lime application
- 2010 - 2012: fertilizing, seeding and planting
- 2013 - 2017: monitoring

No remedial action will be performed by the State within the Stucky Ridge Injured Area outside of the State-owned portion of Section 36, although EPA will require remedial action be performed by the potentially responsible party, as discussed in Section 3, and as set forth in the RDU 1 and RDU 3 RAWPs/FDRs. No remedial action will be performed by the State within the Smelter Hill Injured Area, although

EPA will require remedial action be performed by the potentially responsible party, as discussed in Section 3, and as set forth in the RDU 14 RAWP/FDR.

The State-owned portion of Section 36 combined restoration/remediation is estimated to cost $2.7 million. More detailed costing is presented in Appendix F.

5.4 Further Restoration on County-Owned Lands Within the Injured Areas

The costs for the planned restoration on State-owned land in the Injured Areas are estimated at $9.4 million. As discussed in Section 1, the consent decree allocates approximately $13.3 million, plus the interest earnings on this amount, to the Smelter Hill Area Uplands State Restoration Account. The expected costs for implementation of the actions on State-owned lands are an estimate, but it is expected that about $4.0 million, or more, will remain in the Smelter Hill Area Uplands State Restoration Account after implementation of those actions. This money will be used to restore, rehabilitate, replace or acquire the equivalent of the injured natural resources on the County-owned lands within the Injured Areas, including restoration consistent with the restoration actions specified in the RDP. This DCRP may be amended to provide for specific additional restoration actions that are coordinated with remedy actions on these County-owned lands after consideration of further input by the County and the public as to what particular restoration actions should be implemented.

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ARCO. Stucky Ridge Uplands Final Remedial Action Work Plan/Final Design Report for RDU I. Anaconda Smelter NPL Site. ARCO, June 2005.

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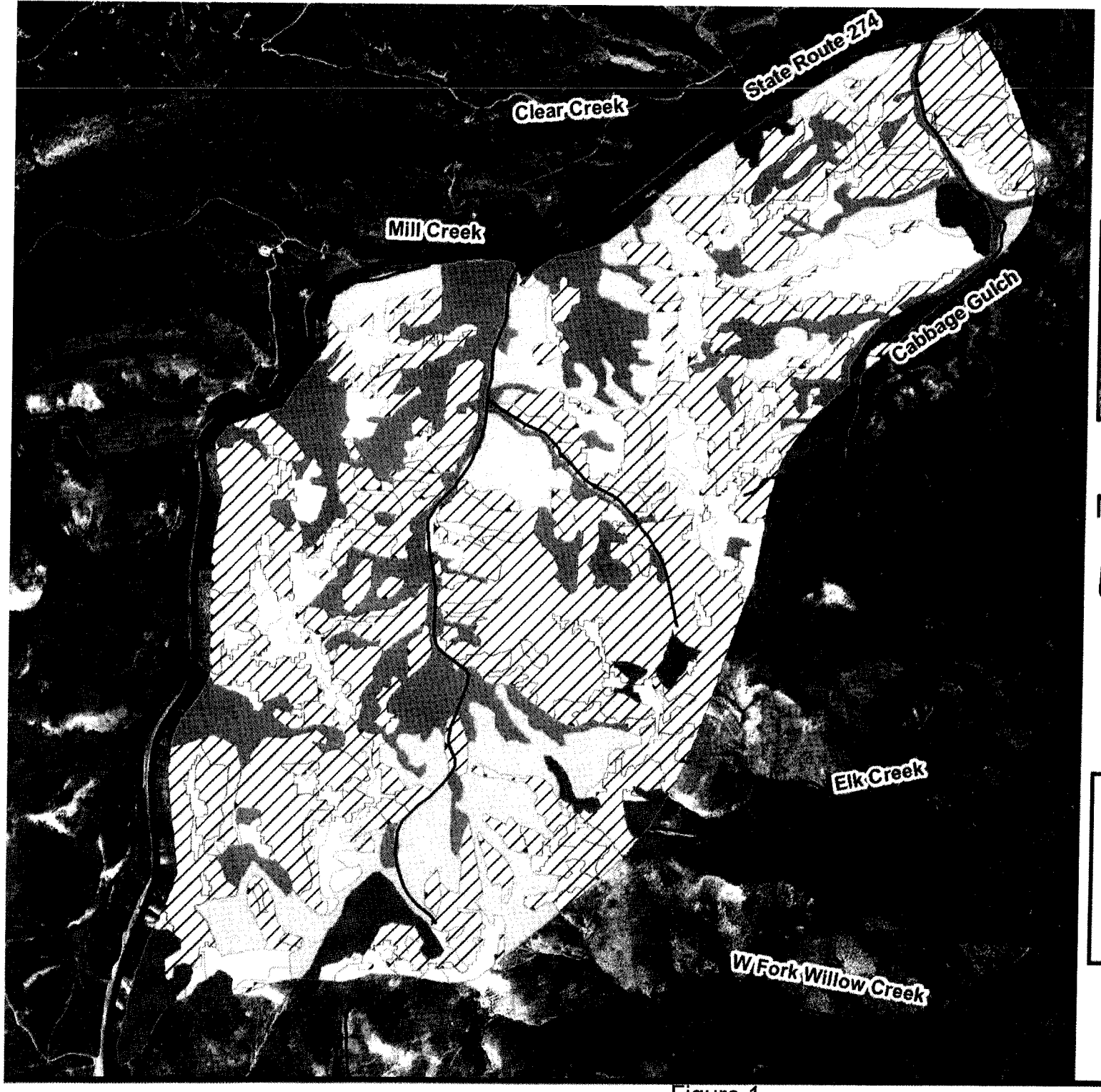
FIGURES



Mt Haggin Injured Area Vegetation Map

Vegetation Cover

Vegetation Types

- Bare
- Bare greater than 35% slope
- Forested - Conifer
- Dense Shrub/Aspen Cover
- Moderate Shrub/Aspen Cover With Scattered Conifers
- Degraded Grassland
- Degraded Grassland greater than 35% slope

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Miles

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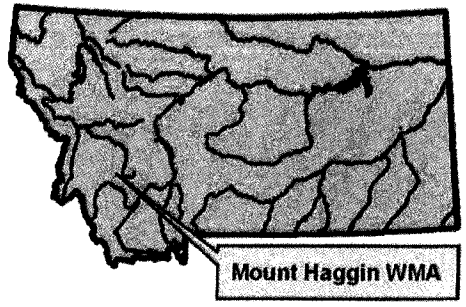
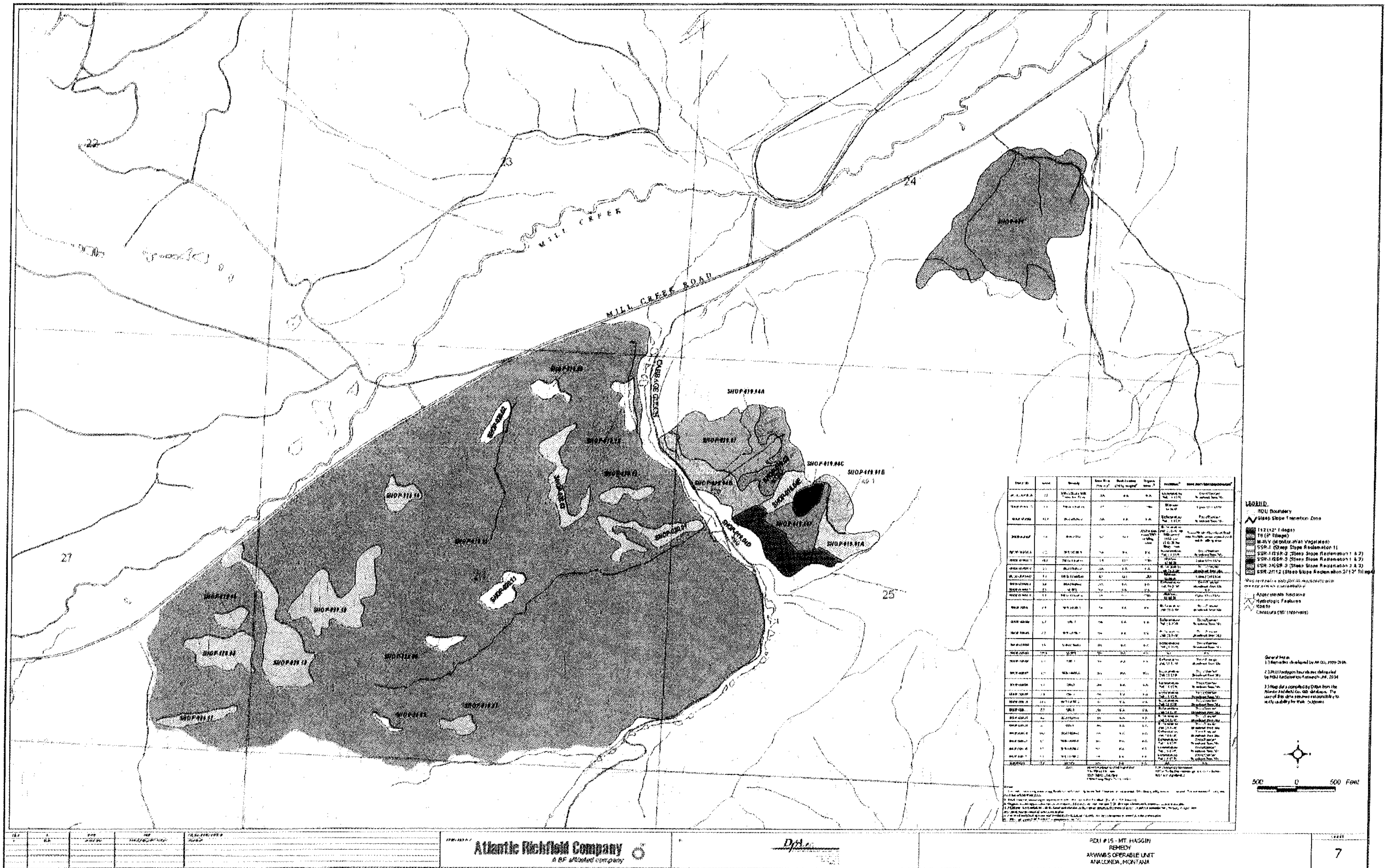


Data Source: This map is based on 2005 1-meter resolution color infrared imagery and field sampling. Background imagery ouside of the study area is 2005 1-meter resolution natural color imagery. Roads are from the US Census Bureau's Tiger 1990 Highway layer. Streams are from National Hydrography Dataset.

Publication Date: July 2006

MONTANA Natural Heritage Program

Figure 1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MILL CREEK
CABBAGE GULCH
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26
27
LEGEND
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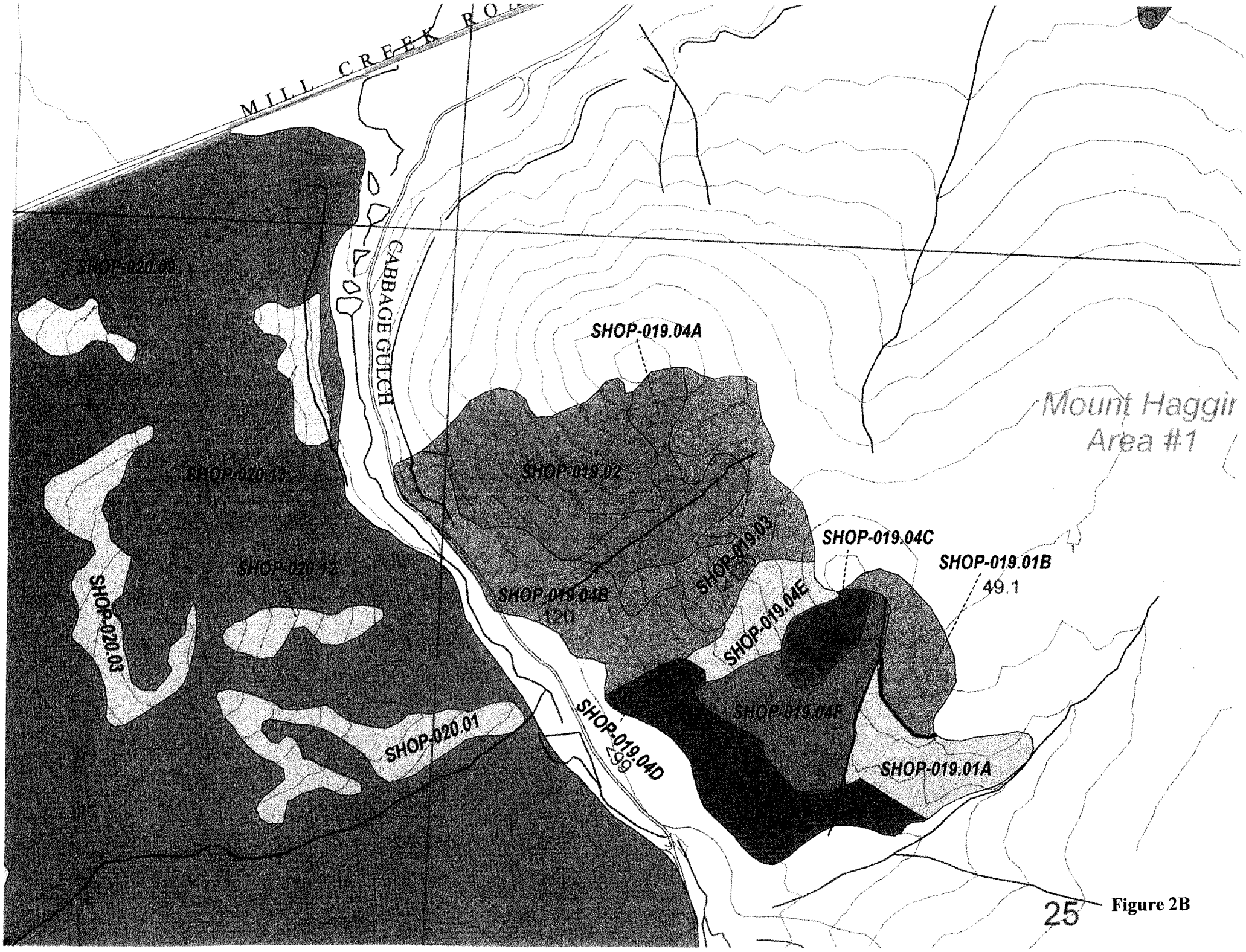
REMEDY
ARWW&S OPERABLE UNIT
ANACONDA, MONTANA
7

Figure 2A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SHOP-019.03
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SHOP-019.01B
49.1
SHOP-019.04B
120
SHOP-019.04E
SHOP-019.04F
SHOP-019.04D
299
SHOP-019.01A
Mount Haggir
Area #1

Figure 2B

PRLU ID	Acres	Remedy	Lime Rate (T/acre)[1]	Rock Content (% by weight)[2]	Organic Matter[3]	Fertilizer[4]	Seed Mix/Plant Requirements[5]
SHOP-019.01-A	5.6	SSR-1/SSR-2 with Transition Zone	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-019.01-B	4.1	Till to 6 inches	2.7	22.4	TBD	500#/acre 12-16-30	Upland Seed Mix
SHOP-019.02	12.0	SSR-2/SSR-3	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-019.03[6]	9.2	SSR-2/T12	8.7	12.1	NA for SSR areas/TBD for tillage areas	Reforestation Pak (11-17-9) for SSR areas/ 500#/acre 12-16-30 for tillage areas	Trees/Shrubs/Broadcast Seed Mix for SSR areas/ Upland seed mix for tillage areas
SHOP-019.04-A	6.2	SSR-2/SSR-3	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-019.04-B	10.2	Till to 6 inches	5.3	15.3	TBD	500#/acre 12-16-30	Upland Seed Mix
SHOP-019.04-C	2.5	SSR-1/SSR-3	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-019.04-D	1.5	Till to 12 inches	8.7	12.1	TBD	500#/acre 12-16-30	Upland Seed Mix
SHOP-019.04-E	3.6	SSR-1/SSR-2	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-019.04-F	7.0	M-WV	NA	NA	NA	NA	NA
SHOP-019.04-G	7.7	Till to 12 inches	5.9	21.4	TBD	500#/acre 12-16-30	Upland Seed Mix
SHOP-020.01	6.5	SSR-1/SSR-2	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.02	2.3	SSR-1	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
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SHOP-020.06	1.5	SSR-1	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.07	1.9	SSR-1/SSR-2	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.08	0.7	SSR-1	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.09	1.9	SSR-1	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.10	14.0	SSR-1/SSR-2	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.11	3.5	SSR-1	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.12	2.2	SSR-1/SSR-2	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.13	2.7	SSR-1	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.14	14.9	SSR-1/SSR-2	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.15	1.9	SSR-1/SSR-2	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.16	2.9	SSR-1/SSR-2	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-020.17	3.0	SSR-1/SSR-2	NA	NA	NA	Reforestation Pak (11-17-9)	Trees/Shrubs/ Broadcast Seed Mix
SHOP-021	56.5	M-WV	NA	NA	NA	NA	NA

Key:
M-WV= Monitor-Well Vegetated
T6= Till to 6 inches
T12= Till to 12 inches
SSR= Steep Slope Reclamation
PR= Previously Reclaimed
TBD= To Be Determined, prior to remediation.
NA= Not Applicable

Notes:
1. Lime rate shown represents application rate for remedy identified. Lime rate to be corrected for lime quality and rock content. For correction factors, see remedial action work plan.
2. Rock content percentages represent that for the interval to be tilled. (i.e. 6" or 12" interval)
3. Organic matter application rate to be corrected for moisture content and LOI. See specifications in remedial action work plan.
4. Fertilizer - Reforestation Pak for trees and shrubs in SSR areas, granular for seeded areas. Numbers indicate %N, $\%P_2O_5$, $\%K_2O$. See specifications in remedial action work plan.
5. For seed mix/plant species and seeding rate/planting density, see specifications in remedial action work plan.
6. 15% of polygon SHOP-019.03 is assumed to be T12

LEGEND:
- RDU Boundary
- Steep Slope Transition Zone
- T12 (12" Tillage)
- T6 (6" Tillage)
- M-WV (Monitor-Well Vegetated)
- SSR-1 (Steep Slope Reclamation 1)
- SSR-1/SSR-2 (Steep Slope Reclamation 1 & 2)
- SSR-1/SSR-3 (Steep Slope Reclamation 1 & 3)
- SSR-2/SSR-3 (Steep Slope Reclamation 2 & 3)
- SSR-2/T12 (Steep Slope Reclamation 2/ 12" Tillage)

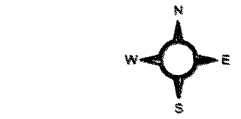
Red text below polygon ID represents post remedy arsenic concentration

- Approximate Sections
- Hydrologic Features
- Roads
- Contours (50' Intervals)

General Notes:
1.) Remedies developed by ARCO, 1999-2006.

2.) PRLU polygon boundaries delineated by MSU Reclamation Research Unit, 2004.

3.) Map data compiled by DJ&A from the Atlantic Richfield Co. GIS database. The user of this data assumes responsibility to verify usability for their purposes.



500 0 500 Feet

RDU #15 - MT. HAGGIN
REMEDY
ARWW&S OPERABLE UNIT
ANACONDA, MONTANA

Legend on Figure 2A

SHEET
7

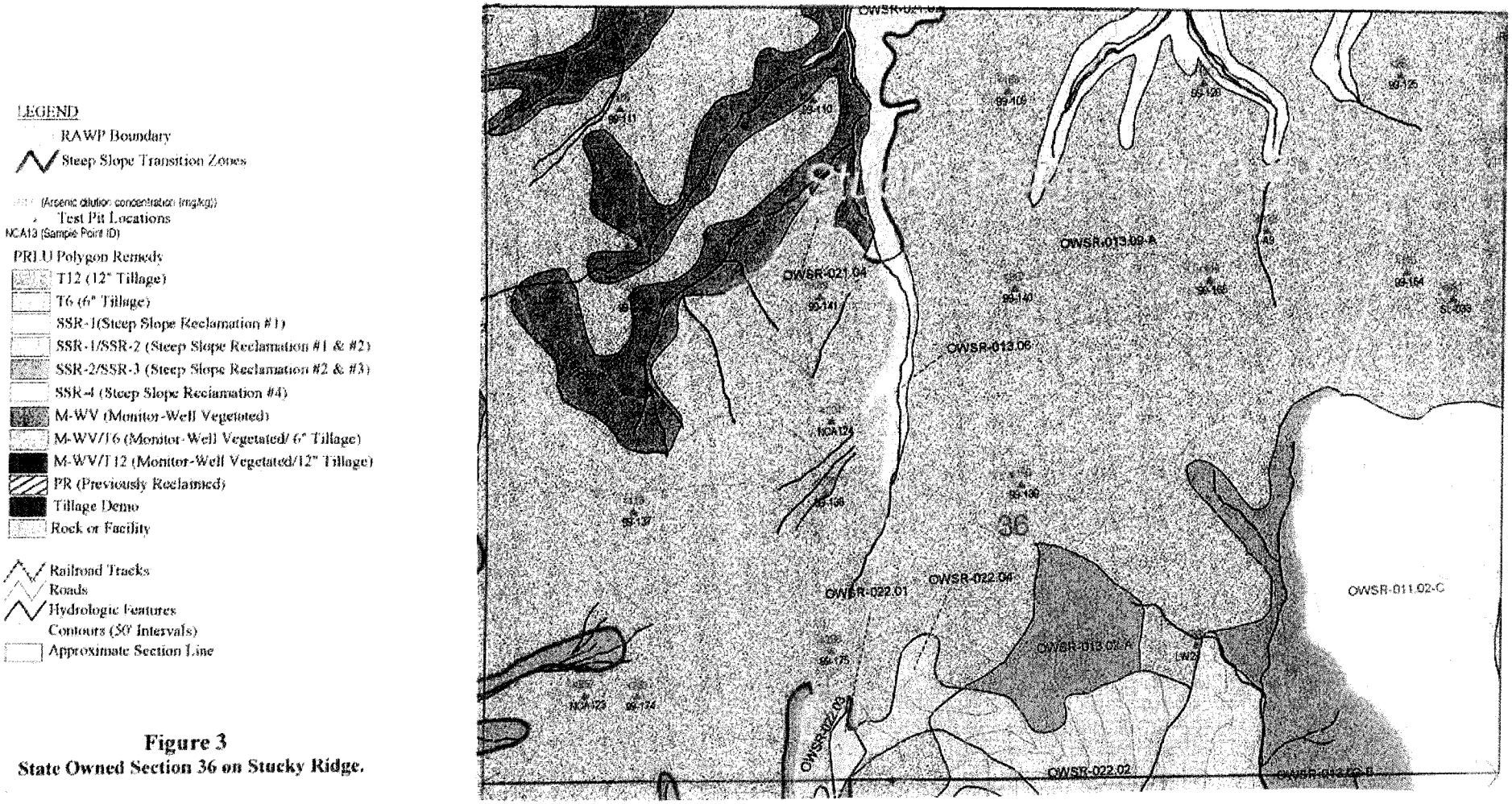


Figure 3
State Owned Section 36 on Stucky Ridge.

Appendix G

State Consent Decree Obligations

Consent Decree Obligations of the State

The *Consent Decree for the Clark Fork River Operable Unit and for Remaining State of Montana Clark Fork Basin Natural Resource Damages Claims*, Civil Action No. CV89-039-BU-SEH (Clark Fork Site Consent Decree) contains some important commitments made by the State at State-owned property within the Injured Areas. In addition, the State has made specific commitments to the Atlantic Richfield Company (AR) in State CD II. Also, the State has made several commitments contained in a Site Specific Memorandum of Agreement (SMOA) between EPA and the State. The commitments contained in these documents are summarized below. In the case of conflict between this summary and the consent decrees and the SMOA, the provisions of the consent decrees and the SMOA will control.

1. **Use of Restoration Account.** The State commits to use the Smelter Hill Area Uplands State Restoration Account to restore, rehabilitate, replace or acquire the equivalent of the injured natural resources as provided in this DCRP. This includes implementation of the State Property Remedial Commitments discussed below, including implementation of the work, attainment of performance standards, emergency response, and additional remedial work. The use of the restoration account also includes reimbursement to AR should EPA order AR to perform any activities the State is required to perform.

2. **Commitment to perform remedial action on certain State-owned lands (State Property Remedial Commitments).** The State commits to perform the work on the State-owned portion of Section 36 set forth in the RDU 1 Stucky Ridge FDR/RAWP (June 2005) as provided for in this DCRP. The State also commits to perform the work identified in the RDU 15 Mount Haggin Uplands FDR/RAWP (December 2007) as provided for in this DCRP. This work, together with certain potential additional response actions, comprise the State Property Remedial Commitments under the Clark Fork Site Consent Decree. The State commits to perform additional response actions within the "scope of the remedy selected in the ARWW&S OU ROD to be implemented by the State Property Remedial Commitments," as defined in Subparagraph 66.b of the Clark Fork Site Consent Decree if necessary to achieve and maintain the performance standards set forth in this DCRP or maintain the effectiveness of the portion of the remedy implemented by the State, as provided for in Subparagraph 66.b. of the Clark Fork Site Consent Decree.

3. **Compliance with laws.** The State commits to implement the State Property Remedial Commitments in accordance with federal and state law, including ARARs.

4. **Emergency Response.** The State commits to implement emergency measures in the event of a release or threatened release during performance of the State Property Remedial Commitments at the State-owned property.

5. **Additional Remedial Work.** The State commits to AR to perform additional response actions, if any, or pay costs of response actions, if any, at State Lands as defined in State CD II, as provided for in State CD II.

6. **EPA Approvals.** The State commits to EPA approvals of all required plans and reports set forth below, pertaining to the design and implementation of the State Property Remedial Commitments, subject to dispute resolution.

Specific plans and reports requiring EPA concurrence or approval for RDU 1 (State-owned portion of Section 36) and RDU 15

- Amendments to the Smelter Hill Area Uplands Resources Restoration Plan revising the nature or extent of the performance standards for the State Property Remedial Commitments.

- Remedial Action Work Plan for RDU 1 (for the State owned portion of Section 36) (finalized and approved), Remedial Action Work Plan for RDU 15 (finalized and approved), and as set forth in the Remedial Action Work Plans, the following for each: an operation and maintenance plan, vegetation management plan, inspection & maintenance plan for engineered controls (e.g., sediment basins), a pre-construction summary, including pre-design (polygon delineation, organic matter investigation, lime evaluation, construction BMPs, etc.), wetland delineation discussion, historic and cultural review discussion, endangered species discussion, and health and safety plan, and a remedial action schedule. The State will incorporate operable unit-wide plans where appropriate. Unless a plan has otherwise been previously finalized and approved, a draft of these plans will be provided to EPA for review and comment, and final plans, except for health and safety plans, are subject to EPA approval.

- Request for Change (RFC) – such as design changes

- Remedial Action Construction Completion Report, including as built drawings, RFCs, quality assurance results, and confirmation sampling, if any

- Annual Monitoring and Maintenance Report for vegetation and sediment basins

- Request for Maintenance (RFC during O&M)

- Performance Standard Compliance Determination Reports

- Institutional Control Plans for State Property Remedial Commitments

- Step 4 Wetland Accounting

- Modification to seed mixes

- Any short term vegetation monitoring plans

- O & M plans, including any surface water management plan, vegetation management plan, groundwater management plan, and engineered controls inspection and management plan.

- Plans required under the additional work provision

7. **Commitment to attain Performance Standards.** The State Property Remedial Commitments include the attainment of performance standards, including ARARs, set forth in the ARWWS ROD and its upcoming ESD.

RDU 1 Performance Standards

The State's implementation of the State Property Remedial Commitments includes the attainment of performance standards identified in the Remedial Action Work Plan / Final Design Report for the State-owned portion of Section 36 in Remedial Design Unit 1 of the Anaconda Smelter NPL Site (June 2005) as provided for in this DCRP. No attainment by the State of these performance standards is required outside of the State-owned portion of Section 36 within RDU 1. The performance standards set forth in the Remedial Action Work Plan / Final Design Report for Remedial Design Unit 1 and its associated management plans are summarized below. In the case of conflict between the provisions in this paragraph and the Remedial Action Work Plan / Final Design Report for Remedial Design Unit 1 and its associated management plans, the provisions the Remedial Action Work Plan / Final Design Report for Remedial Design Unit 1 and its associated management plans will control.

- *Vegetation / Soils.* On the State-owned portion of Section 36, the soils cannot exceed the human health arsenic level for the land use. For the RDU 1 State-owned property, that level is 1,000 ppm arsenic, with the exception of steep slopes areas, where the performance standard is 2,500 ppm. The vegetation performance standards that must be met on the State-owned portion of Section 36 will be set forth in the upcoming site-wide Vegetation Management Plan.[1]

- *Surface water.* The surface water performance standards that must be met on the State-owned portion of Section 36 will be set forth in the upcoming site-wide Surface Water Management Plan and any drainage specific surface water management plan.[2] There is no surface water within the State-owned portion of Section 36. However, a portion of Section 36 drains toward Lost Creek and a

[1] This plan is being developed by AR, and will be subject to review and approval by EPA and Montana DEQ.

[2] This plan is being developed by AR, and will be subject to review and approval by EPA and Montana DEQ.

portion of the area drains toward Warm Springs Creek. Attainment of surface water performance standards on the State-owned portion will likely be limited to implementation of best management practices (i.e.., dozer basins), engineered controls, and vegetative cover on the State-owned portion of Section 36.

- *Groundwater.* The groundwater performance standards that must be met on the State-owned portion of Section 36 will be set forth in the upcoming site-wide upcoming Groundwater Management Plan.[3] The groundwater standard for arsenic for the alluvial and bedrock aquifers beneath the State-owned portion of Section 36 has been waived. Attainment of groundwater performance standards on the State-owned portion will be limited to implementation of a vegetative cover.

- *Air.* The FDR requires standard construction practices, such as periodic dust suppression, to attain these standards during construction activities on the State-owned portion of Section 36.

- *Institutional controls.* The institutional controls performance standards that must be met on the State-owned portion of Section 36 will be set forth in the site-wide Institutional Controls Management Plan.[4]

- *Special resources.* The FDR requires compliance with requirements related to special resources, such as endangered species and historic properties on the State-owned portion of Section 36.

RDU 15 Performance Standards

The State's implementation of the State Property Remedial Commitments includes the attainment of performance standards identified in the Remedial Action Work Plan / Final Design Report for RDU 15 of the Anaconda Smelter NPL Site (December 2007) as provided for in this DCRP. The Remedial Action Work Plan / Final Design Report contemplates construction actions within the 137 acre Cabbage Gulch area in the north end of the Mount Haggin Injured Area. The Remedial Action Work Plan / Final Design Report does not require physical actions in the Mount Haggin Injured Area outside of the 137 acre Cabbage Gulch area other than monitoring, weed spraying, and, for Cabbage Gulch, Muddy Creek basin and Joyner Creek basin, the installation of a sedimentation basin at the mouth of each. No attainment of vegetation performance standards will be required in Remedial Design Unit 15 outside of the 137 acre Cabbage Gulch area; however, EPA may require additional vegetation in RDU 15, as provided in Subparagraph 66.b of the Clark Fork Site Consent Decree, if necessary to meet the surface water and groundwater performance standards as set forth below. The performance standards set forth in the Remedial Action Work Plan / Final Design Report

[3] This plan is being developed by AR, and will be subject to review and approval by EPA and Montana DEQ.

[4] This plan is being developed by AR, and will be subject to review and approval by EPA and Montana DEQ.

for Remedial Design Unit 15 and its associated management plans are summarized below. In the case of conflict between the provisions in this paragraph and the Remedial Action Work Plan / Final Design Report for Remedial Design Unit 15 and its associated management plans, the provisions the Remedial Action Work Plan / Final Design Report for Remedial Design Unit 15 and its associated management plans will control.

- *Vegetation / Soils.* Within RDU 15, the soils cannot exceed the human health arsenic level for the land use. For steep slope areas within RDU 15, the performance standard is 2,500 ppm arsenic. The performance standard for soils in any remaining areas is 1,000 ppm arsenic. The vegetation performance standards that must be met within RDU 15 will be set forth in the upcoming site-wide Vegetation Management Plan.[5]

- *Surface water.* The surface water performance standards that must be met at RDU 15 will be set forth in the site-wide Surface Water Management Plan.[6] The final performance standards pertaining to RDU 15 are identified in the Mill Creek SWMP, a component of the site-wide Surface Water Management Plan. RDU 15 is within the Mill Creek basin, and is one of the contributors to Mill Creek surface water.

- *Groundwater.* The groundwater performance standards that must be met in RDU 15 will be set forth in the site-wide Groundwater Management Plan.[7] The groundwater standard for arsenic for the bedrock aquifer beneath RDU 15 has been waived. Attainment of groundwater performance standards in RDU 15 will be limited to implementation of a vegetative cover.

- *Air.* The FDR requires standard construction practices, such as periodic dust suppression, to attain these standards during construction activities in RDU 15.

- *Institutional controls.* The institutional controls performance standards that must be met in RDU 15 will be set forth in the site-wide Institutional Controls Management Plan.[8]

- *Special resources.* The FDR requires compliance with requirements related to special resources, such as endangered species and historic properties in RDU 15.

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[5] This plan is being developed by AR, and will be subject to review and approval by EPA and Montana DEQ.

[6] This plan is being developed by AR, and will be subject to review and approval by EPA and Montana DEQ.

[7] This plan is being developed by AR, and will be subject to review and approval by EPA and Montana DEQ.

[8] This plan is being developed by AR, and will be subject to review and approval by EPA and Montana DEQ.